

Claims

What is claimed is:

- 5 1. A method of manufacturing an optical identification element; the method comprising:
- providing a substrate;
- winding the substrate around a device to provide at least one grating writing section;
- 10 writing at least one grating into the substrate disposed in grating writing section; and
- splitting the substrate disposed in the grating writing section to form a plurality of optical identification elements.
- 15 2. The method of claim 1, wherein the substrate is a fiber.
3. The method of claim 1, wherein the substrate is an optical fiber having a core and a cladding.
- 20 4. The method of claim 1, wherein the substrate is photosensitive.
5. The method of claim 2 further including stripping a buffer from the fiber.
- 25 6. The method of claim 1, wherein the device maintains the grating writing section flat.
7. The method of claim 1, wherein the device provides a plurality of flat grating writing sections of wound substrate.

8. The method of claim 1 further including bonding the wrapped substrate together.

5 9. The method of claim 1, further including bonding the wrapped substrate to a sheet material.

10 10. The method of claim 8 wherein the splitting of the substrate in the grating writing section further includes cutting the substrate bonded to the sheet material without cutting through the sheet material.

11. The method of claim 10 further including separating the optical identification elements from the sheet material.

15 12. The method of claim 11 wherein the separating the elements and material is performing by dissolving adhesive bonding them together.

13. The method of claim 1, wherein the device is polygonal shaped to provide a plurality of flat grating writing sections of wound substrate.

20 14. The method of claim 1, wherein the grating comprises a plurality of co-located gratings.

25 15. The method of claim 13, wherein gratings are written into a plurality of grating writing sections of wound substrate.